

Poor sleep more dangerous for women

March 10 2008

Researchers at Duke University Medical Center say they may have figured out why poor sleep does more harm to cardiovascular health in women than in men.

Their study, appearing online in the journal Brain, Behavior and Immunity, found that poor sleep is associated with greater psychological distress and higher levels of biomarkers associated with elevated risk of heart disease and type 2 diabetes. They also found that these associations are significantly stronger in women than in men.

"This is the first empirical evidence that supports what we have observed about the role of gender and its effects upon sleep and health," says Edward Suarez, an associate professor in the department of psychiatry and behavioral sciences at Duke and the lead author of the study. "The study suggests that poor sleep – measured by the total amount of sleep, the degree of awakening during the night, and most importantly, how long it takes to get to sleep – may have more serious health consequences for women than for men."

Suarez says that while women are twice as likely as men to report problems with sleep, most sleep studies in the past have focused on men, a phenomenon that has been slowly changing in recent years.

Researchers studied 210 apparently healthy, middle-aged men and women without any history of sleep disorders. None smoked or took any medications on a daily basis and investigators excluded any women who were on hormone therapy, which has been shown in some studies to alter



sleep patterns in some women.

Using a standardized sleep quality questionnaire, participants rated various dimensions of their sleep during the previous month. Additional measures assessed the extent of any depression, anger, hostility and perceived social support from friends and family.

Blood samples taken from the volunteers were measured for levels of biomarkers associated with increased risk of heart disease and diabetes, including insulin and glucose levels, fibrinogen (a clotting factor) and two inflammatory proteins, interleukin-6 and C-reactive protein.

The researchers found that about 40 percent of the men and the women were classified as poor sleepers, defined as having frequent problems falling asleep, taking 30 or more minutes to fall asleep or awakening frequently during the night. But while their sleep quality ratings were similar, men and women had dramatically different risk profiles.

"We found that for women, poor sleep is strongly associated with high levels of psychological distress, and greater feelings of hostility, depression and anger. In contrast, these feelings were not associated with the same degree of sleep disruption in men," says Suarez.

Women who reported higher degree of sleep disruption also had higher levels of all the biomarkers tested. For women, poor sleep was associated with higher levels of C-reactive protein and interleukin-6, measures of inflammation that have been associated with increased risk of heart disease, and higher levels of insulin. The results were so dramatic that of those women considered poor sleepers, 33 per cent had C-reactive protein levels associated with high risk of heart disease, says Suarez.

"Interestingly, it appears that it's not so much the overall poor sleep quality that was associated with greater risk, but rather the length of time



it takes a person to fall asleep that takes the highest toll," says Suarez. "Women who reported taking a half an hour or more to fall asleep showed the worst risk profile."

The study was supported by a grant from the National Institutes of Health.

Suarez says he's planning further studies to understand the complex relationship between health risk and poor sleep in men and women. He believes that the gender differences may be due, in part, to variation in the activity of a number of naturally occurring substances in the body, such as tryptophan, an amino acid; serotonin, a neurotransmitter; and melatonin, a neurohormone. "All of these substances are known to affect mood, sleep, onset of sleep, inflammation and insulin resistance," he says.

"Good sleep is related to good health. More research needs to be done to define gender-linked responses to poor sleep, including the role that sex hormones play over a lifetime and how sleep needs and responses change from childhood to maturity," says Suarez.

Source: Duke University Medical Center

Citation: Poor sleep more dangerous for women (2008, March 10) retrieved 27 April 2024 from <u>https://medicalxpress.com/news/2008-03-poor-dangerous-women.html</u>

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